IN THE CLAIMS

This listing of claims replaces all prior listings:

1. (Withdrawn) A semiconductor device, wherein a gap is formed between wirings formed on a substrate, and the gap is filled with gas having a thermal conductivity equal to or higher than three times that of air at 0°C.

2. (Withdrawn) A semiconductor device according to claim 1, wherein said gas is one of helium gas and hydrogen gas.

3. (Withdrawn) A semiconductor device according to claim 1, wherein a gas impermeable film through which said gas cannot be permeated is formed on the wiring and above the gap.

4. (Withdrawn) A semiconductor device according to claim 1, wherein a gas permeable film through which said gas can be permeated is formed on the wiring and above the gap, and a gas impermeable film through which said gas cannot be permeated is formed on the gas permeable film.

5. (Currently Amended) A wiring forming method in a semiconductor device, the method comprising the steps of:

(A) forming a wiring and a filling layer filled between wirings, on a substrate;

(B) forming a gas permeable film on the wiring and the filling layer, said gas permeable film being made of a porous insulation material;

(C) removing the filling layer through the gas permeable film so as to form a gap between the wirings;

(D) filling the gap with a gas having a thermal conductivity equal to or higher than three times that of air at 0°C through the gas permeable film into the gap; and

(E) forming a gas impermeable film on the gas permeable film,

wherein,

the filling layer comprises:

a non-fluorine system polymer selected from the group consisting of BCB, poly-aryl-ether, polyimide, and like effective non-fluorine system polymers,

a fluorine system polymer selected from the group consisting of a fluorine addition polymer, tetra-fluoro ethylene, cyclo-perfluoro carbon, poly-aryl-fluoride ether, fluorine addition parylene, and like effective flourine system polymers,

organic SOG,

silicon oxide system xerogel,

nano-porous silica, or

amorphous carbon.

6. (Original) A wiring forming method in a semiconductor device according to claim 5, wherein ~~said gas permeable film is made of a porous insulation material, and~~ said gas impermeable film is made of silicon nitride.

7. (Original) A wiring forming method in a semiconductor device according to claim 5, wherein said gas one of is helium gas and hydrogen gas.

8. (Previously Presented) A wiring forming method in a semiconductor device, the method comprising the steps of:

(A) forming a plurality of wirings on a substrate with a filling layer between said wirings;

(B) forming a gas permeable film on the wiring and the filling layer, said gas permeable film being made of a porous insulation material;

(C) removing the filling layer through the gas permeable film so as to form a gap; and

(~~B~~D) forming a gas impermeable film on the wirings and above gaps existing between the wirings, in a gas atmosphere having a thermal conductivity equal to or higher than three times that of air at 0°C;

wherein,

the filling layer comprises:

a non-fluorine system polymer selected from the group consisting of BCB, poly-aryl-ether, polyimide, and like effective non-fluorine system polymers,

a fluorine system polymer selected from the group consisting of a fluorine addition polymer, tetra-fluoro ethylene, cyclo-perfluoro carbon, poly-aryl-fluoride ether, fluorine addition parylene, and like effective flourine system polymers,

organic SOG,

silicon oxide system xerogel,

nano-porous silica, or

amorphous carbon.

9. (Original) A wiring forming method in a semiconductor device according to claim 8, wherein said gas impermeable film is made of a polyimide film.

10. (Original) A wiring forming method in a semiconductor device according to claim 8, wherein said gas is one of helium gas and hydrogen gas.

11. (Previously Presented) A wiring forming method in a semiconductor device, the method comprising the steps of:

(A) forming a plurality of wirings on a substrate with a filling layer between the wirings;

(B) forming a gas permeable film on the wirings and above gaps existing between the wirings, said gas permeable film being made of a porous insulating material;

(C) filling a gas having a thermal conductivity equal to or higher than three times that of air at 0°C through the gas permeable films into the gaps; and

(D) forming a gas impermeable film on the gas permeable film,

wherein,

the filling layer comprises:

a non-fluorine system polymer selected from the group consisting of BCB, poly-aryl-ether, polyimide, and like effective non-fluorine system polymers,

a fluorine system polymer selected from the group consisting of a fluorine addition polymer, tetra-fluoro ethylene, cyclo-perfluoro carbon, poly-aryl-fluoride ether, fluorine addition parylene, and like effective flourine system polymers,

organic SOG,

silicon oxide system xerogel,

nano-porous silica, or

amorphous carbon.

12. (Original) A wiring forming method in a semiconductor device according to claim 11, wherein said gas permeable film is made of one of silicon oxide film and a low dielectric constant film; and said gas impermeable film is made of silicon nitride.

13. (Original) A wiring forming method in a semiconductor device according to claim 11, wherein said gas is one of helium gas and hydrogen gas.